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FLOOD INSURANCE STUDY

76

SALINE COUNTY, ARKANSAS
UNINCORPORATED AREAS

MAY 17, 1982

Federal Emergency Management Agency

COMMUNITY NUMBER - 050191

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the unincorporated areas of Saline County, Arkansas and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Saline County to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these Federally-supported studies are based. These criteria take precedence over the minimum Federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3 (d). In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain those requirements and criteria.

1.2 Coordination

The initial meeting of city officials with representatives of FEMA and the Corps of Engineers (COE), was held on May 10, 1978, to discuss streams to be studied, criteria for floodway widths, and the limits of the study.

The final coordination meeting was held with city officials on, December 16, 1981 to present the final study results prior to publication. This FIS was acceptable to the community.

1.3 Authority and Acknowledgments

The source of authority for this flood insurance study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Engineer District, Little Rock, for FEMA, under Interagency Agreement No. H-18-78, Project Order No. 40 and Amendments thereto. This work was completed in January 1981 and covered the flooding sources in the unincorporated areas of Saline County as agreed upon during the time and cost meeting with representatives of the County, FEMA, and the COE.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Saline County, Arkansas. The area of study is shown on the Vicinity Map (Figure 1).

The areas studied by detailed methods were selected with priority given to known flood hazard areas and areas of projected development. Approximate methods of analysis were used to study those areas having low development potential and/or minimal flood hazards as identified at the initiation of the study.

Detailed studies were made for Saline River, Cedar Creek, Mill Creek, Fourche Creek, Otter Creek, Otter Creek Tributary, Crooked Creek, Lorance Creek, and Dry Creek. Detailed and approximate methods were used for North Fork Saline River, Alum Fork Saline River, Middle Fork Saline River, and Hurricane Creek. Approximate methods were used to determine 100-year flood outlines on Holly Creek, Dodson Creek Tributary, South Fork Saline River, Clear Creek, Miller Creek, and Hopf Branch.

2.2 Community Description

Saline County, Arkansas, is located in the central portion of Arkansas. The counties of Perry and Pulaski lie to the north, Hot Spring and Grant to the south, Pulaski to the east, and Garland and Hot Spring to the west.

Saline County is a heavily forested rural county with the July 1, 1976 unincorporated area population of 22,160 (Reference 1). Major transportation arteries in this county include the Missouri Pacific and the Chicago, Rock Island and Pacific Railroads, Interstate Highway 30; U.S. Highways 65, 67, 70, 88, and 167; Arkansas State Highways 5, 9, 35, and 183; and numerous county roads.

The climate in Saline County is characterized by long summers and relatively short winters. The temperature range in the past 30 years has varied from a high of 109 degrees F in August 1943 to a low of -17 degrees F in February 1951. Rainfall averages 52.77 inches annually at the Benton Weather Station. Monthly precipitation extremes range from 5.82 inches in May down to 3.38 inches in October.

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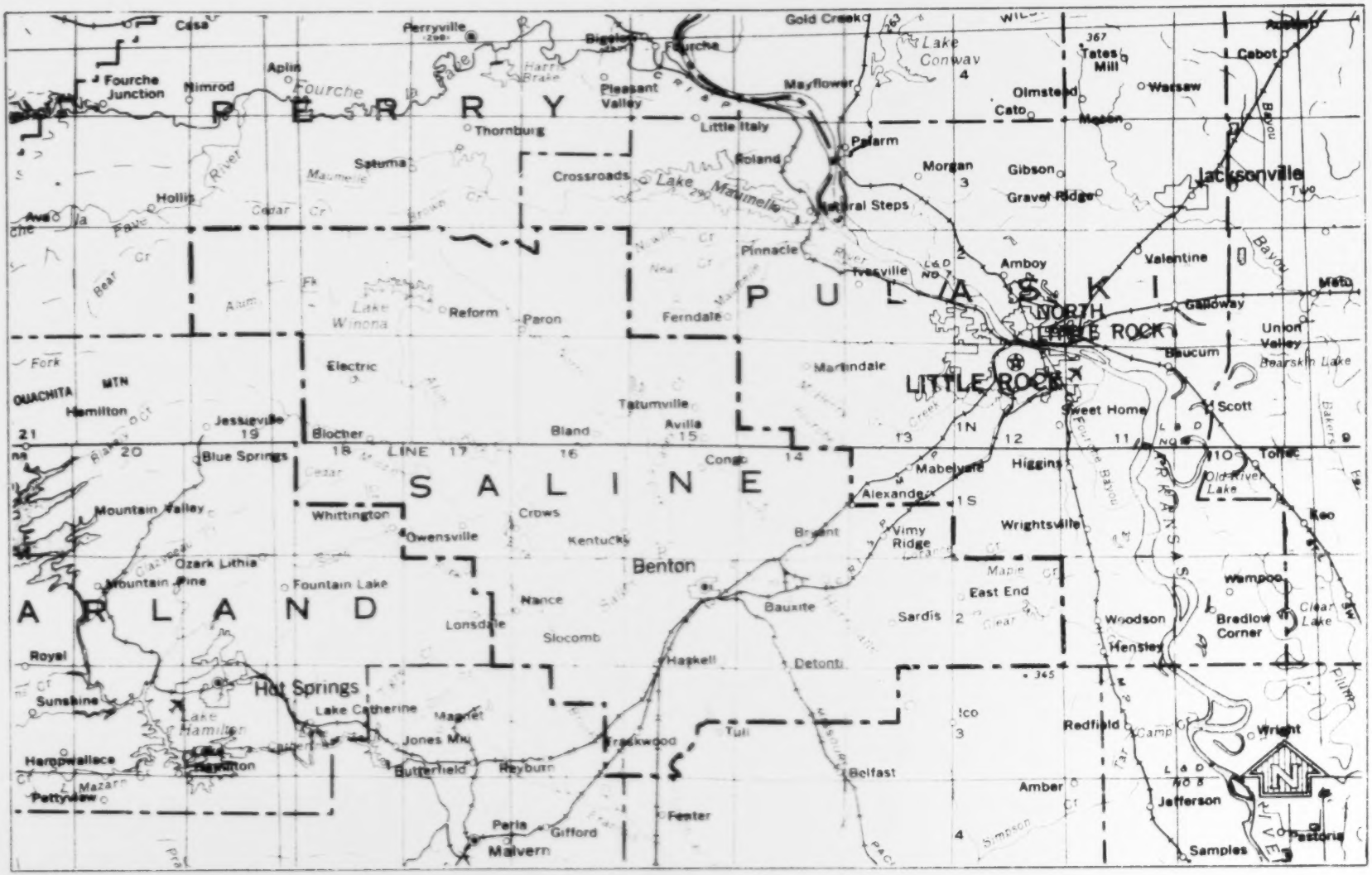
PERRY
SALINE
GARLAND
PULASKI
Perryville
Casa
Fourche Junction
Nimrod
Aplin
Fourche Lake
Harris Brake
Pleasant Valley
Thornburg
Little Italy
Bigelow
Fourche
Gold Creek
Mayflower
Lake Conway
Tates Mill
Cabot
Olmsted
Cato
Mabelvale
Palarm
Roland
Crossroads
Lake Maumelle
Morgan
Gibson
Gravel Ridge
Natural Steps
Jacksonville
Pinnacle
Ivy ville
Amboy
Valentine
Galloway
Reform
Paron
Ferndale
Lake Winona
NORTH LITTLE ROCK
LITTLE ROCK
Baucum
Union Valley
Bearskin Lake
Martindale
Electric
Hollis
Ouachita Mtn
Hamilton
Jessieville
Blocher
Bland
Avilla
Tatumville
Sweet Home
Scott
Blue Springs
Mountain Valley
Whittington
Owensville
Crows
Kentucky
Benton
Bryant
Vimy Ridge
Alexander
Higgins
Wrightsville
Old River Lake
Keo
Ozark Lithia
Mountain Pine
Fountain Lake
Nance
Lonsdale
Slocomb
Bauxite
East End
Sardis
Wampoo
Bredlow Corner
Clear Lake
Woodson
Hensley
Royal
Sunshine
Hot Springs
Lake Catherine
Lake Hamilton
Jones Mill
Haskell
Deotonti
Redfield
Camp
Wright
Harrapwallace
Pattyview
Mazarn
Butterfield
Reyburn
Frankwood
Tull
Belfast
Amber
Jefferson
Pastoria
Samples
Paris
Gifford
Malvern
Fester
Simpson
Bayou Meto
Two Bayou
Old River Lake
Clear Lake
Filmore
Camp
Meto
Tolnac
Reo
Wright
Redfield
Wrightsville
Higgins
Mabelvale
Alexander
Bryant
Vimy Ridge
Sardis
Bauxite
East End
Woodson
Hensley
Bredlow Corner
Wampoo
Clear Lake
Keo
Old River Lake
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Thornburg
Little Italy
Fourche Junction
Nimrod
Aplin
Fourche Lake
Harris Brake
Bigelow
Fourche
Perryville
Casa
Reform
Paron
Ferndale
Lake Winona

2.3 Principal Flood Problems

The flood problems in Saline County are present throughout the county. Currently significant problems are generally found along highways and roads crossing the many streams studied in this report. In the future, without careful consideration of the potential for significant increases in flood losses due to unwise land use and management, the continued growth of the county, particularly near the urban areas, could result in serious flood problems.

There have been a number of floods on the Saline River in recent years. The floods of September 1978, January 1969, May 1968, May 1954, December 1953, April 1944, April 1939, and April 1927 are large floods which have occurred. The discharges associated with those events at the Benton, Arkansas, gage are 34,000 cubic feet per second (cfs), 100,000 cfs, 66,000 cfs, 48,000 cfs, 49,500 cfs, 58,000 cfs, 67,000 cfs, and 110,000 cfs, respectively. These floodwaters have caused damage to homes, bridges, crops, and farm land in the county.

2.4 Flood Protection Measures.

Dams on the streams within Saline County are principally used for water supply and do not reduce downstream floods appreciably during large floods. These dams are as follows: Hurricane Creek Dam, on Hurricane Creek; Coronado Dam, on Cedar Creek; Cortez Dam, on Mill Creek; Norrell Dam, on Brushy Creek, a tributary of North Fork Saline River; and Winona Dam, on Cypress Creek, a tributary of North Fork Saline River.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, and 500-year period (recurrence intervals), have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one percent chance of annual occurrence) in any 50 year period is about 40 percent (four in 10), and for any 90 year period, the risk increases to about 60 percent (six in 10). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the unincorporated areas of Saline County.

The necessary hydrologic studies for the Saline River were obtained from streamflow records at the USGS gage (07363000) at Benton from July 1938 to date. Discharges on the other streams studied in detail were determined by use of unit hydrographs developed at various locations on these streams along with appropriate design storms. It was necessary to route the design floods through Hurricane Lake, Lake Coronado, and Lake Cortez to allow for any storage modification available. The design storms were developed from the U.S. Weather Bureau Technical Papers 40 and 49 (Reference 2). Five hundred-year discharges were obtained by extrapolating the curves obtained from the 10-, 50-, and 100-year flood discharges. Gaged data and high water marks were used as guides in determining the design profiles. A summary of drainage area-peak discharge relationships for each stream studied in detail is given in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
SALINE RIVER AND ALUM FORK					
SALINE RIVER Benton gage (river mile 198.5)	569.0	64,600	93,000	104,500	130,100
CEDAR CREEK					
Mile 1.87	12.9	7,560	9,780	10,690	12,800
MIDDLE FORK SALINE RIVER					
County Road 189	71.9	19,700	25,600	28,550	34,700
MILL CREEK					
Mouth	10.7	3,100	4,450	5,080	6,600
NORTH FORK SALINE RIVER					
Mouth	139.2	22,330	29,450	33,000	40,100
HURRICANE CREEK					
Highway 183	25.8	8,060	10,880	12,220	15,200
FOURCHE CREEK					
Mile 29.0	12.2	6,400	8,900	9,825	12,000
OTTER CREEK					
County Line (Shannon Hills Corporate Limits)	7.9	5,900	7,475	8,500	11,350

TABLE 1 -SUMMARY OF DISCHARGES - continued

OTTER CREEK TRIBUTARY					
Mouth	1.3	1,420	1,725	1,960	2,825
CROOKED CREEK					
Highway 111	13.6	9,300	12,000	13,400	19,000
LORANCE AND DRY CREEK					
County Road 215 (Arch Street Pike)	25.2	8,400	11,000	12,400	14,500

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of streams in the county were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each stream studied in detail.

Cross sections for streams studied in detail were obtained from new field surveys or from surveys previously made for other studies in the county. All waterway openings and invert elevations through bridges and culverts were obtained during the field surveys. Locations of selected cross sections used in the hydraulic analysis are shown on the flood profiles, Exhibit 1. For the stream segments for which a floodway was computed, selected cross section locations are also shown on the flood boundary and floodway maps. Elevation reference marks are shown on Exhibit 4 and their locations are shown on the flood boundary and floodway maps.

The roughness coefficients (Mannings "n") for all streams in this study were estimated from conditions along the channel and overbank sections and range from 0.03 to 0.06 for the channel sections and from 0.06 to 0.15 for the overbank sections. Although clogging of channels and bridge openings by debris during floods is a serious problem, for the purposes of this study it was assumed that no clogging of openings and waterways occurred and that all bridge structures would remain intact.

Water-surface profiles were developed using the HEC-2 Water -Surface Profile Program (Reference 3).

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by FEMA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and the 500-year floods have been delineated using the flood elevations that are shown on profiles and projected on 1" = 500' topographic maps with a contour interval of 10 and 20 feet (Reference 4). An index map of the flood boundary and floodway maps is shown on Exhibit 2. For the streams studied by approximate methods the boundary of the 100-year flood was developed from depths determined from slope-area computations using areas and slopes from topographic sheets and discharges from discharge-area curves. These depths were projected on the topographic maps referenced above and checked by field inspection.

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Maps (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and therefore, may not be subject to flooding. Owing to limitations of the map scale and/or lack of detailed topographic data, such areas are not shown.

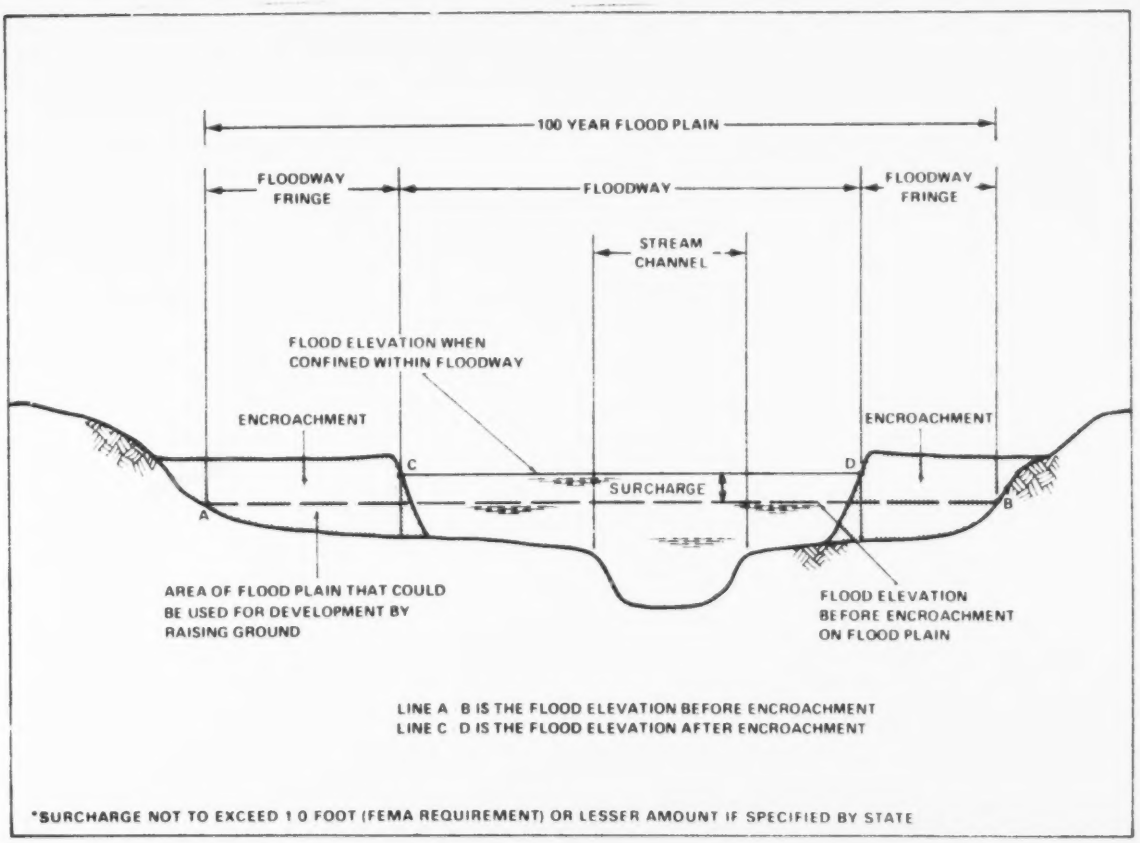
4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain except where existing levees determined floodway limits. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway was computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway boundaries were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FLOODWAY SCHEMATIC Figure 2

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Saline River								
A	183.89	4000/3400[2]	48,451	2.2	251.9	251.9	252.7	0.8
B	189.90	10,000	79,519	1.3	264.3	264.3	265.2	0.9
C	195.00	6,050	50,406	2.1	274.7	274.7	275.7	1.0
D	195.95	5,380	21,505	4.9	282.8	282.8	283.3	0.5
E	196.58	4200/2300[2]	59,399	1.8	284.7	284.7	285.2	0.5
F	197.24	3270/2740[2]	25,393	4.1	286.2	286.2	286.9	0.7
G	197.92	1,210	21,061	5.0	287.9	287.9	288.6	0.7
H	198.97	2100/950[2]	33,630	3.1	292.5	292.5	293.2	0.7
I	200.51	3,215	30,746	3.4	296.0	296.0	296.9	0.9
Alum Fork Saline River								
A	1.00	1,950	22,701	3.7	302.2	302.2	303.2	1.0
North Fork Saline River								
A	0.38	1,220	17,377	1.9	299.6	299.6	300.6	1.0
B	1.34	1,100	12,685	2.6	301.8	301.8	302.7	0.9

[1]Miles above mouth
[2]Total width/width within county limits.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

FLOODWAY DATA

SALINE RIVER - ALUM FORK SALINE RIVER - NORTH FORK SALINE RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Middle Fork Saline River								
A	16.21	900	6,632	4.3	470.2	470.2	470.9	0.7
B	17.37	1,200	12,172	2.3	481.6	481.6	482.4	0.8
C	18.43	950	6,994	4.1	492.1	492.1	493.1	1.0
D	19.53	835	7,817	3.7	505.5	505.5	505.8	0.3
E	20.66	650	5,585	5.1	515.8	515.8	516.3	0.5
F	21.40	650	5,528	5.2	525.4	525.4	526.3	0.9
G	22.36	650	7,509	3.8	536.5	536.5	537.4	0.9
H	23.81	1,100	10,316	2.8	547.5	547.5	548.3	0.8
Mill Creek								
A	0.58	240	1,271	4.0	545.5	545.5	546.5	1.0
Cedar Creek								
A	2.22	175	1,392	7.7	486.6	486.6	487.3	0.7
B	3.08	280	2,677	4.0	507.0	507.0	507.9	0.9
C	3.97	310	1,963	4.5	526.5	526.5	527.3	0.8
D	4.84	250	1,871	4.1	550.5	550.5	551.1	0.6
E	5.95	160	650	8.8	578.4	578.4	579.4	1.0

[1]Miles above mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR

(UNINCORPORATED AREAS)

FLOODWAY DATA

MIDDLE FORK SALINE RIVER - MILL CREEK - CEDAR CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Hurricane Creek								
A	50.06	900	6,693	1.8	340.2	340.2	341.0	0.8
B	51.31	1,600	12,112	1.0	348.4	348.4	349.0	0.6
C	51.66	1120/760[2]	1,315	9.3	350.0	350.0	350.8	0.8
D	52.16	800	4,925	2.5	356.5	356.5	357.1	0.6
E	53.78	800	5,860	2.1	376.3	376.3	376.6	0.3
Fourche Creek								
A	22.54	645	2,968	4.1	320.9	320.9	321.7	0.8
B	23.00	975	5,257	2.3	326.0	326.0	326.9	0.9
C	23.35	850	5,044	2.4	332.1	332.1	333.1	1.0
D	23.70	925	5,162	2.3	336.3	336.3	337.2	0.9
E[3]	24.21	745/0[2]	4,693	2.6	342.6	342.6	343.5	0.9
F	31.86	250	1,753	2.5	489.2	489.2	489.2	0.0
G	32.45	200	1,052	2.5	506.5	506.5	507.1	0.6
H	33.10	100	415	6.3	532.0	532.0	532.2	0.2
Otter Creek								
A	6.32	735/615[2]	4,670	1.6	319.0	319.0	319.9	0.9
B	7.18	470	2,393	1.5	330.0	330.0	331.0	1.0

[1] Miles above mouth
[2] Total width/width within county limits.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR

(UNINCORPORATED AREAS)

FLOODWAY DATA

HURRICANE CREEK - FOURCHE CREEK - OTTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Otter Creek Tributary								
A	0.07	130	357	5.5	322.2	322.2	323.2	1.0
B	0.57	365	1,408	1.4	332.2	332.2	333.2	1.0
Crooked Creek								
A	2.95	1,135	8,213	1.3	320.2	320.2	321.0	0.8
B	3.80	640	3,371	1.9	327.7	327.7	328.3	0.6
Lorance and Dry Creeks								
A	11.34	635/390[2]	7,109	1.5	248.0	248.0	248.8	0.8
B[3]	12.38	1,045	9,317	1.1	253.0	253.0	254.0	1.0
C[3]	13.32	440	3,754	3.3	254.6	254.6	255.6	1.0
D	15.58	540	5,085	2.4	266.7	266.7	267.6	0.9
E	16.00	915/80[2]	9,079	1.4	268.2	268.2	269.1	0.9
F	17.49	650	5,172	1.2	277.9	277.9	278.8	0.9
G	18.22	700	4,294	1.5	283.1	283.1	283.3	0.2
H	19.24	800	4,001	1.4	288.6	288.6	289.5	0.9

[1]Miles above mouth
[2]Total width/width in unincorporated area of Saline County.
[3]Cross section located outside of unincorporated area of Saline County.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

FLOODWAY DATA

OTTER CREEK TRIBUTARY - CROOKED CREEK - LORANCE AND DRY CREEKS

At some locations on the smaller streams along very crooked channels, the floodway limits were drawn to encompass the banks of the stream along the direction of the overbank flow. In all instances along the smaller streams, when computed floodway widths were not significantly different along a reach of stream, the approximate average of these widths were used throughout the reach as the assumptions used in the HEC-2 program cannot justify the use of such smaller differences.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each significant flooding source studied in detail affecting the unincorporated areas of Saline County, Arkansas.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot

The location of the reaches determined for the flooding sources of Saline County is shown on the flood profiles (Exhibit 1) and summarized in the Flood Insurance Study Zone Data Table (Table 3).

5.2 Flood Hazard Factors (FHFs)

The FHF is used to correlate flood information with insurance rate tables. Correlations between property damages from floods and their assigned FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3]
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Saline River							
Reach 1	0315,0350 0355	-2.3	-0.5	+1.2	025	A5	Varies
Reach 2	0315,0320	-2.8	-0.8	+1.9	030	A6	Varies
Reach 3	0265,0270 0275,0315 0320	-2.4	-0.8	+1.2	025	A5	Varies
Reach 4	0215,0220 0265,0270	-4.2	-1.1	+2.5	040	A8	Varies
Reach 5	0215,0220	-3.5	-0.9	+2.0	035	A7	Varies
Alum Fork Saline River							
Reach 1	0215,0220	-2.8	-0.7	+1.5	030	A6	Varies
North Fork Saline River							
Reach 1	0170,0215 0220	-2.7	-1.9	+1.1	025	A5	Varies

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT-SEE MAP

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

SALINE RIVER - ALUM FORK SALINE RIVER - NORTH FORK SALINE RIVER

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3]
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Middle Fork Saline River							
Reach 1	0100,0145	-1.7	-0.5	+0.8	015	A3	Varies
Reach 2	0095,0100 0145	-2.0	-0.7	+1.2	020	A4	Varies
Mill Creek							
Reach 1	0095,0140	-1.6	-0.4	+0.8	015	A3	Varies
Reach 2	0140	-2.5	-0.6	+1.1	025	A5	Varies
Cedar Creek							
Reach 1	0140,0145	-1.4	-0.4	+0.7	015	A3	Varies
Hurricane Creek							
Reach 1	0225,0230	-1.9	-0.6	+1.1	020	A4	Varies
Reach 2	0225	-1.6	-0.5	+0.9	015	A3	Varies
Reach 3	0225	-2.2	-0.9	+1.4	020	A4	Varies
Fourche Creek							
Reach 1	0180	-1.0	-0.3	+0.4	010	A2	Varies

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT-SEE MAP

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

MIDDLE FORK SALINE RIVER - MILL CREEK - CEDAR CREEK - HURRICANE CREEK - FOURCHE CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3]
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Fourche Creek (cont.)							
Reach 2	0125,0130	-1.2	-0.4	+0.9	010	A2	Varies
Reach 3	0125,0130	-0.6	-0.2	+0.3	005	A1	Varies
Otter Creek							
Reach 1	0235	-0.9	-0.4	+0.8	010	A2	Varies
Reach 2	0235	-0.5	-0.2	+0.4	005	A1	Varies
Otter Creek Tributary							
Reach 1	0235	-0.4	-0.2	+0.5	005	A1	Varies
Crooked Creek							
Reach 1	0180	-2.0	-0.6	+2.3	020	A4	Varies
Reach 2	0180,0230	-1.4	-0.5	+1.4	015	A3	Varies
Reach 3	0180,0230	-2.8	-1.1	+2.3	030	A6	Varies
Reach 4	0230	-1.5	-0.8	+1.2	015	A3	Varies

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT-SEE MAP

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

FOURCHE CREEK - OTTER CREEK - OTTER CREEK TRIBUTARY - CROOKED CREEK

BEST DOCUMENT AVAILABLE

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3]
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Lorance and Dry Creeks							
Reach 1	0240,0245 0250	-1.4	-0.5	+0.8	015	A3	Varies
Reach 2	0235,0240	-1.0	-0.2	+0.5	010	A2	Varies

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT-SEE MAP

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

LORANCE AND DRY CREEKS

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest one-half foot, and shown as a three-digit code. For example, if the difference between the water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, the accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire unincorporated area of Saline County was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations.

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zone A1, A2, A3, A4, A5, A6, A7, and A8:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; or areas subject to 100-year flooding from sources with drainage not subdivided.
Zone C:	Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevation for each flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Maps for the unincorporated areas of Saline County are, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by FEMA.

6.0 OTHER STUDIES

A flood insurance study has been completed for Little Rock, Arkansas (Reference 5). A flood insurance study is being prepared for Pulaski County, Arkansas. All flood data along the streams in these towns common to the unincorporated areas of Saline County were completely coordinated in respect to discharges, profiles, and areas inundated. This FIS is authoritative for the purposes of the flood insurance program.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Federal Center, Denton, Texas 76201.

8.0 BIBLIOGRAPHY AND REFERENCES

1. U.S. Department of Commerce, Bureau of the Census, Population Estimates and Projections, P-25, January 1979.

2. U.S Department of Commerce, National Oceanic and Atmospheric Administration, U.S. Weather Bureau Technical Papers No. 40 (May 1961) and No. 49 (1964).

3. U.S. Army Corps of Engineers, Hydrologic Engineering Center, Computer Program HEC-2, Water-Surface Profiles. (HEC-2N available at Lawrence-Berkley Laboratory in November-December 1977.)

4. U.S. Department of Interior, Geological Survey, 7.5 Minute Series (Topographic) Maps, Scale: 1:24,000, Contour Interval 20 feet; Bryant, Arkansas (1973); Congo, Arkansas (1974); Ferndale, Arkansas (1963); Fourche SW, Arkansas (1963); Goosepond Mountain, Arkansas (1972); Haskell, Arkansas (1974); Lake Norrell, Arkansas (1974); Lonsdale, Arkansas (1972); Lonsdale NE, Arkansas (1972); Paron, Arkansas (1963); Paron SW, Arkansas (1963); Spring Lake, Arkansas (1954); Contour Interval 10 feet; Alexander, Arkansas (1961); Belfast, Arkansas (1964); Little Rock, Arkansas (1961); Traskwood, Arkansas (1963); Tull, Arkansas (1963); Contour Interval 5 feet; Woodson, Arkansas (1954).

5. Flood Insurance Study, City of Little Rock, Arkansas, September 1979.

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Flood Insurance Study, City of Shannon Hills, Arkansas, 1980. (Unpublished)

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U.S. Water Resources Council, Guidelines for Determining Flood Flow Frequency, Bulletin No. 17, Hydrology Committee, March 1976.

King, H. W. and Brater, E. F., King's Handbook of Hydraulics, 5th Edition, McGraw-Hill Book Company, 1963.

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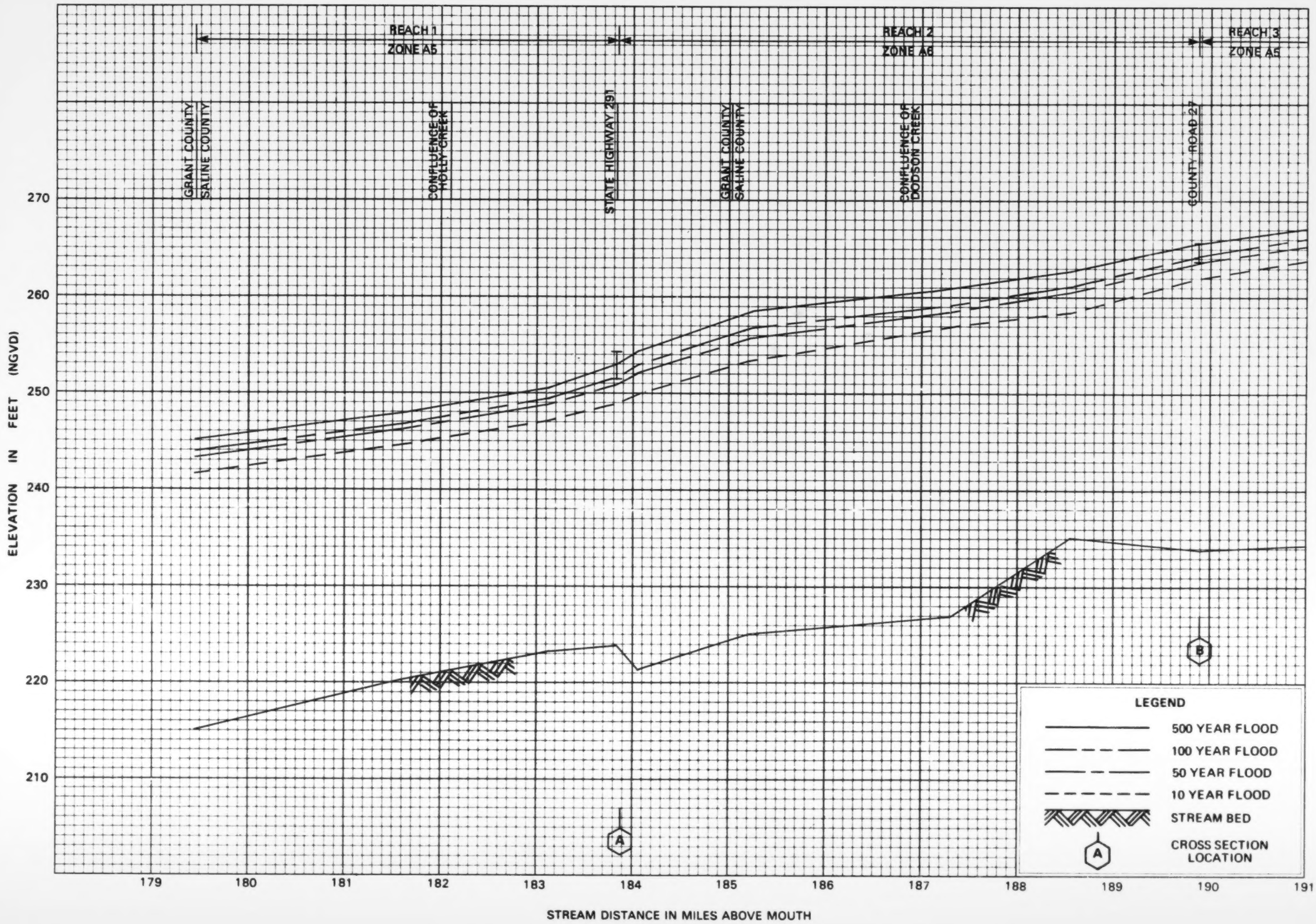

FLOOD PROFILES

SALINE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

01P

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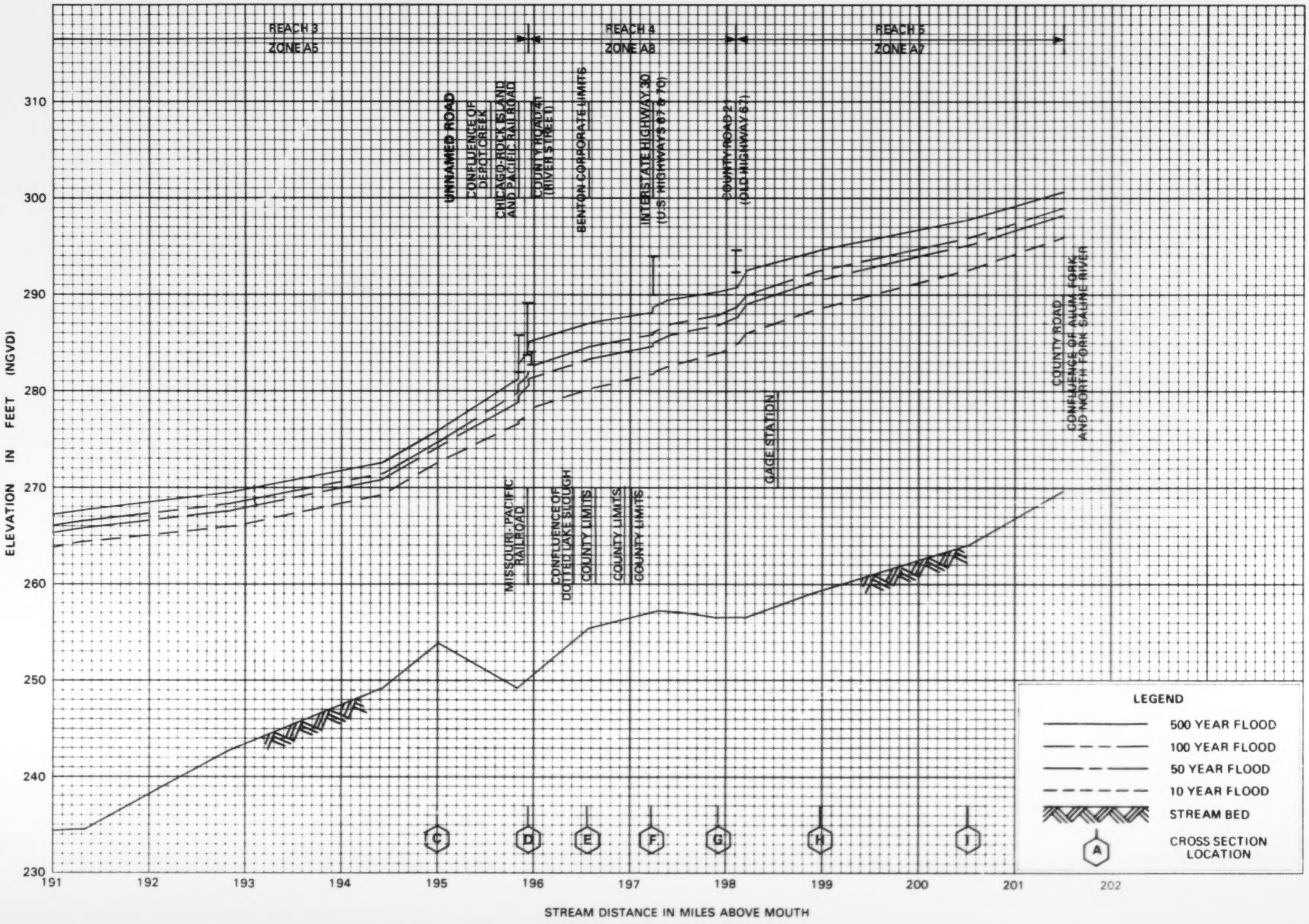

FLOOD PROFILES

SALINE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

02P

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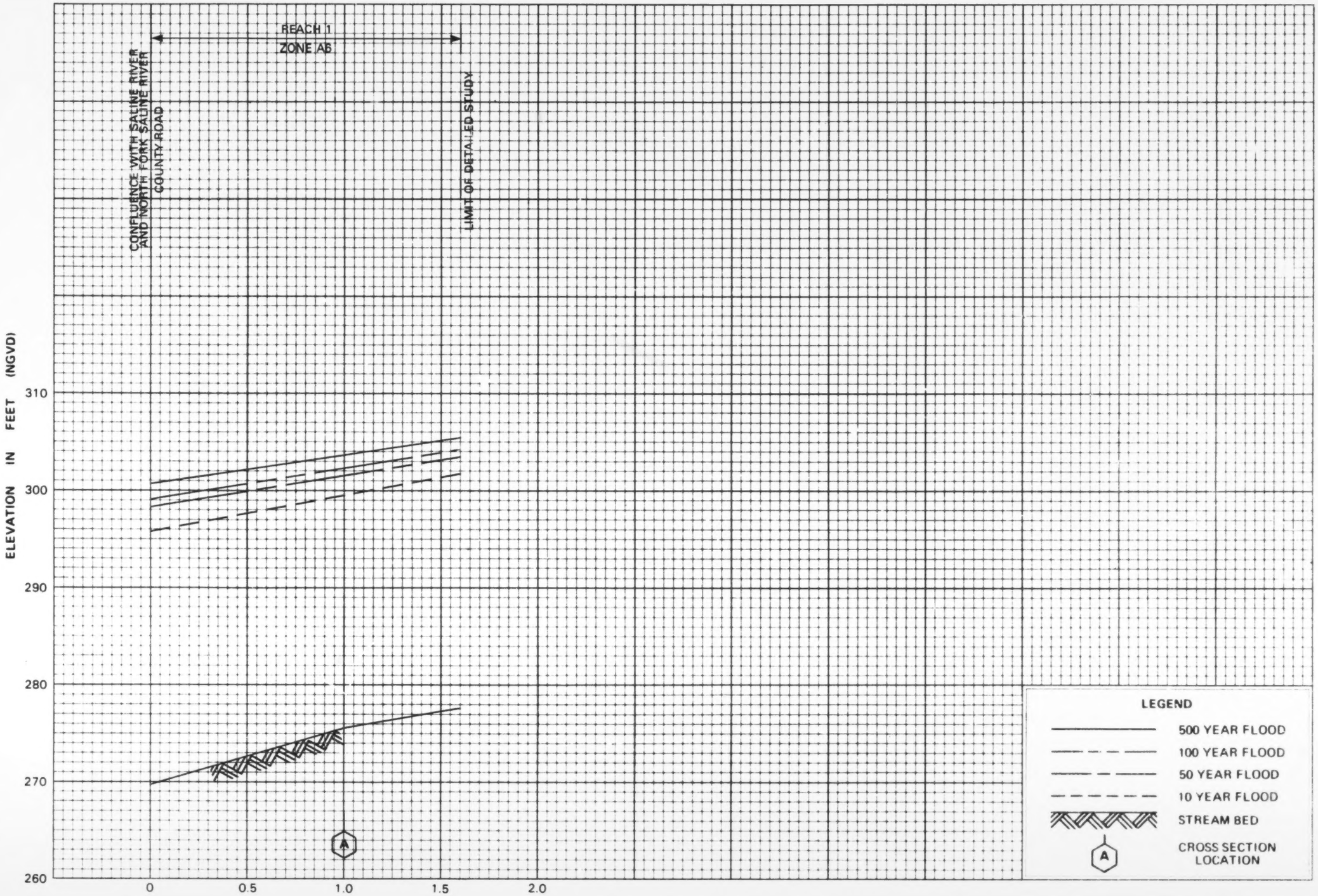

FLOOD PROFILES

ALUM FORK SALINE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

03P

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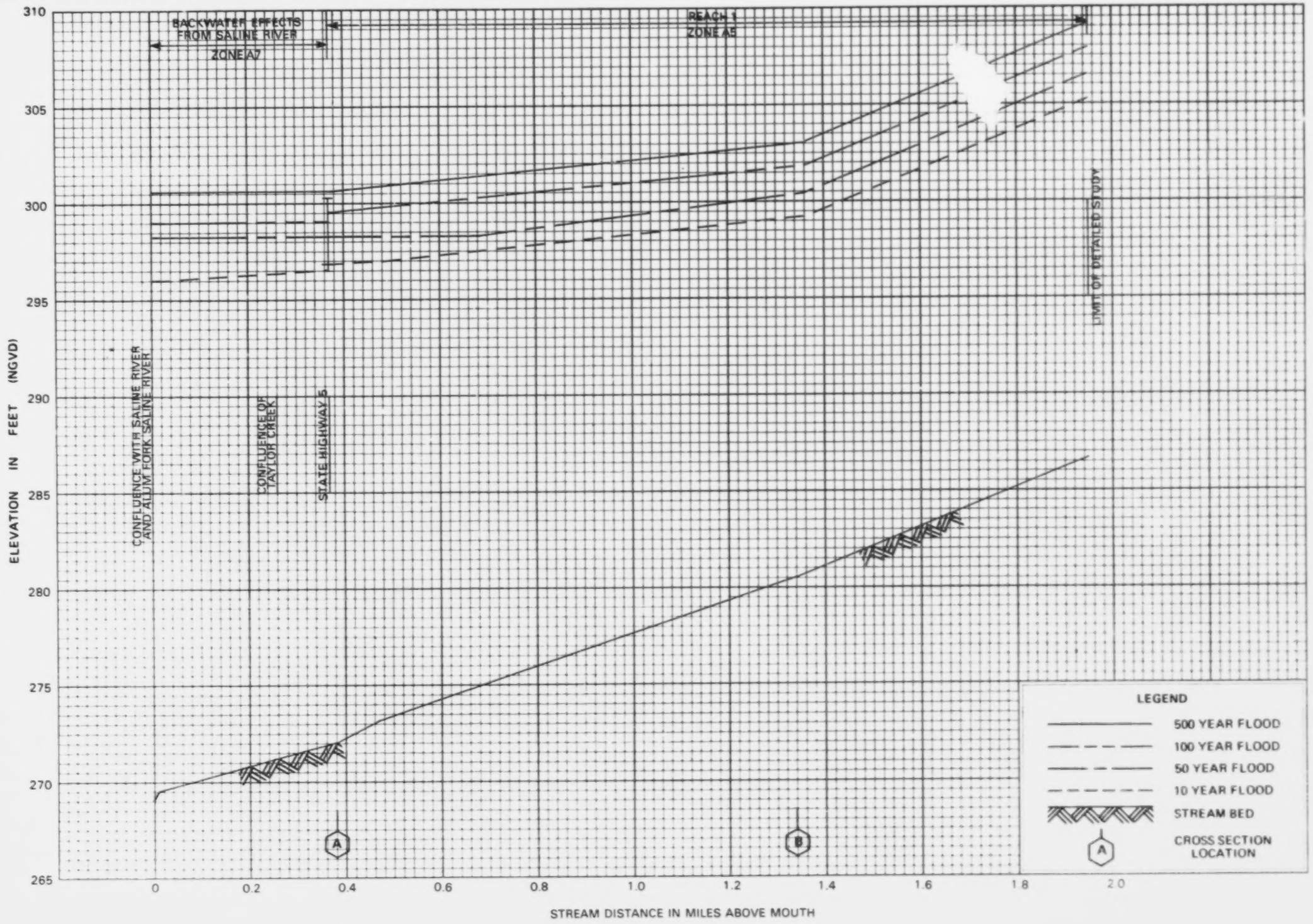

FLOOD PROFILES

NORTH FORK SALINE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

04P

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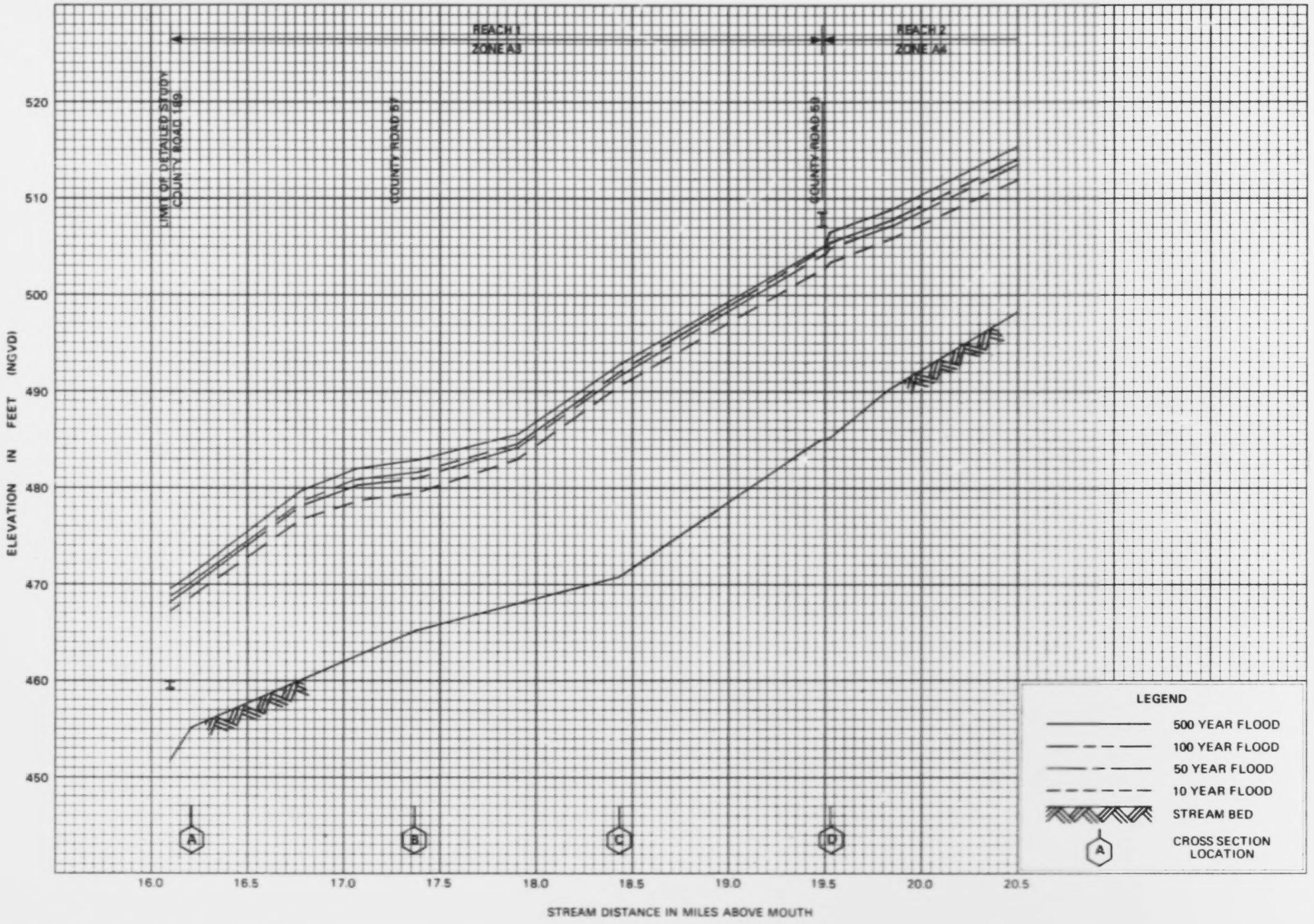

FLOOD PROFILES

MIDDLE FORK SALINE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

05P

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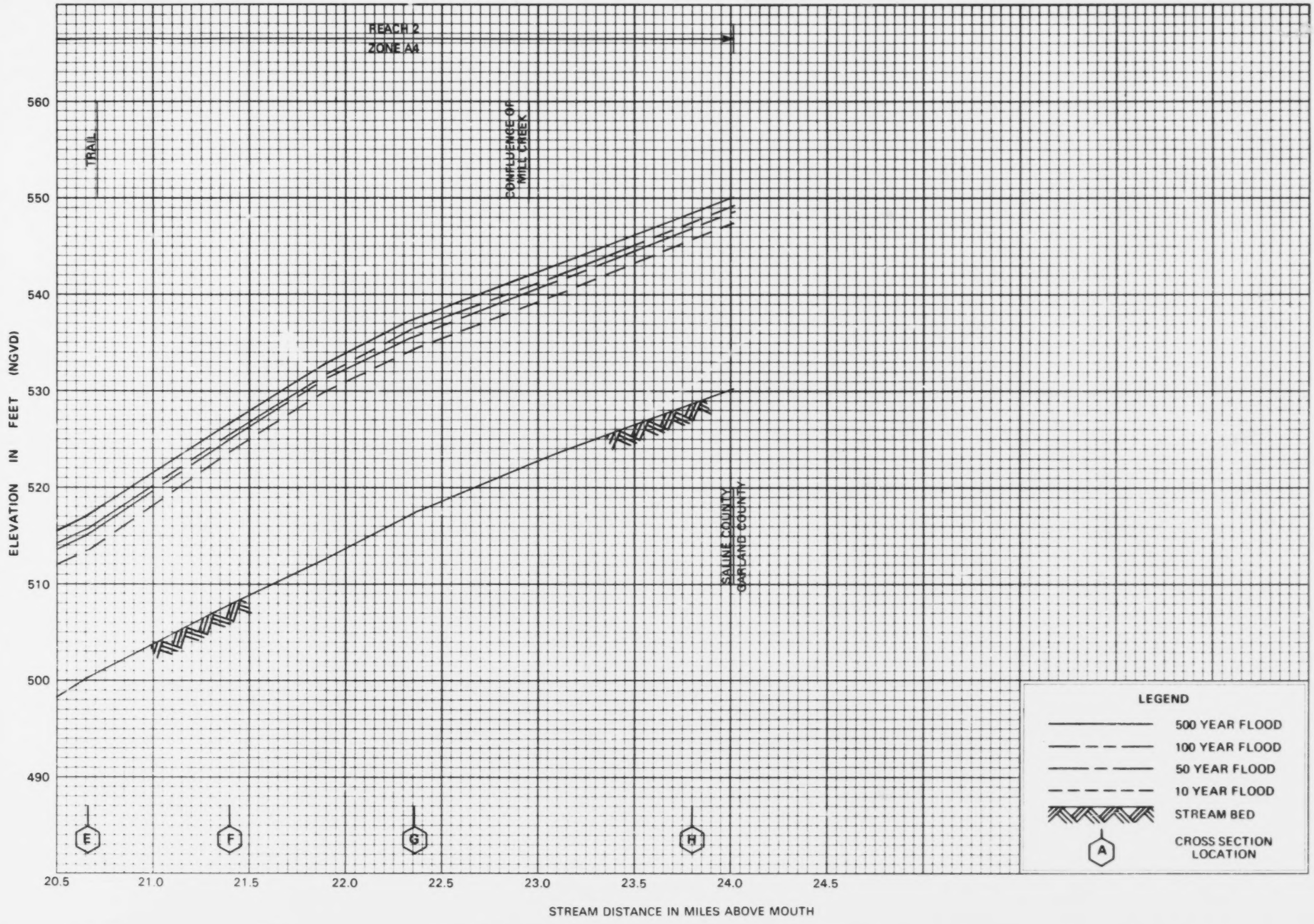

FLOOD PROFILES

MIDDLE FORK SALINE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

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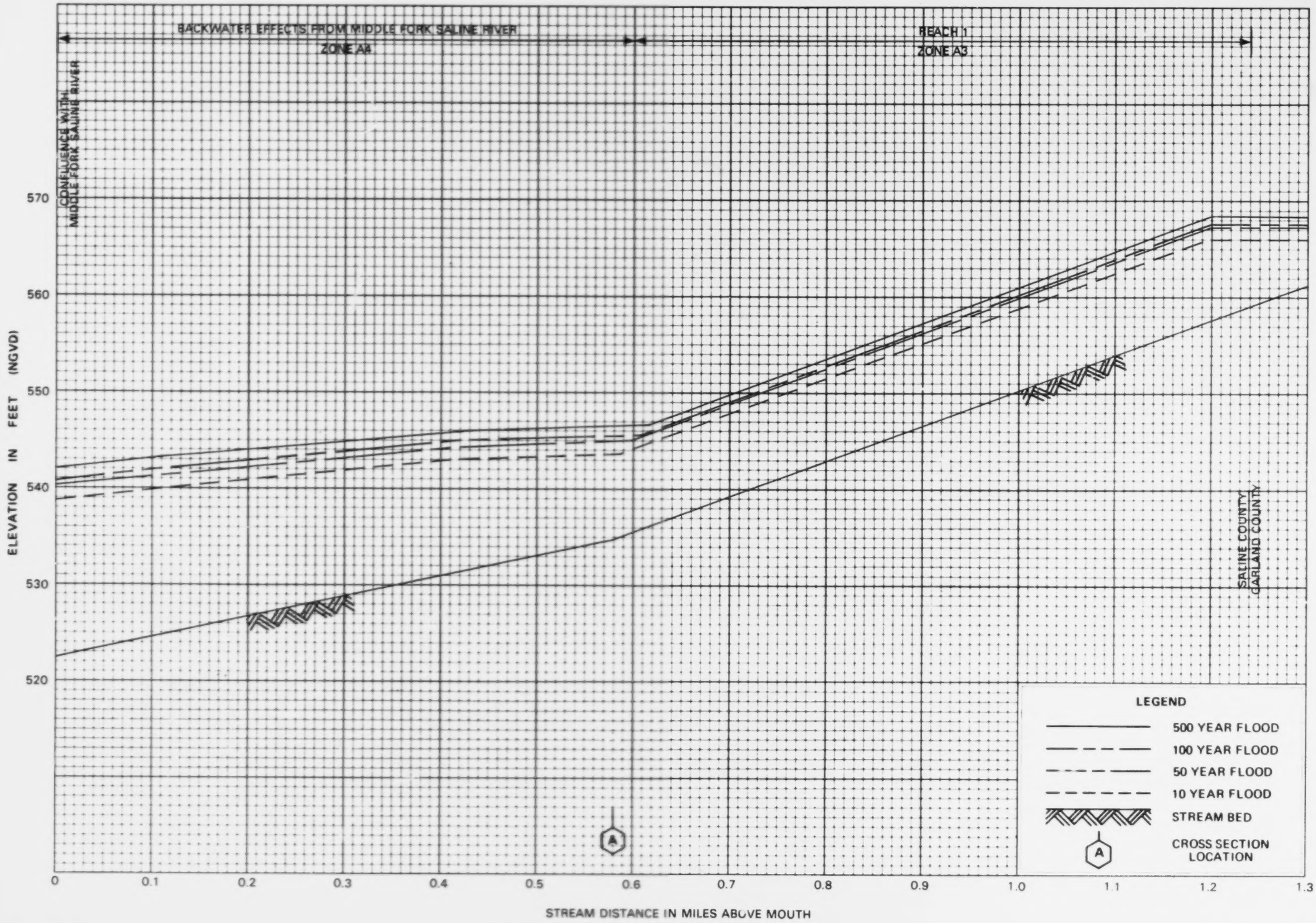

FLOOD PROFILES

MILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

07P

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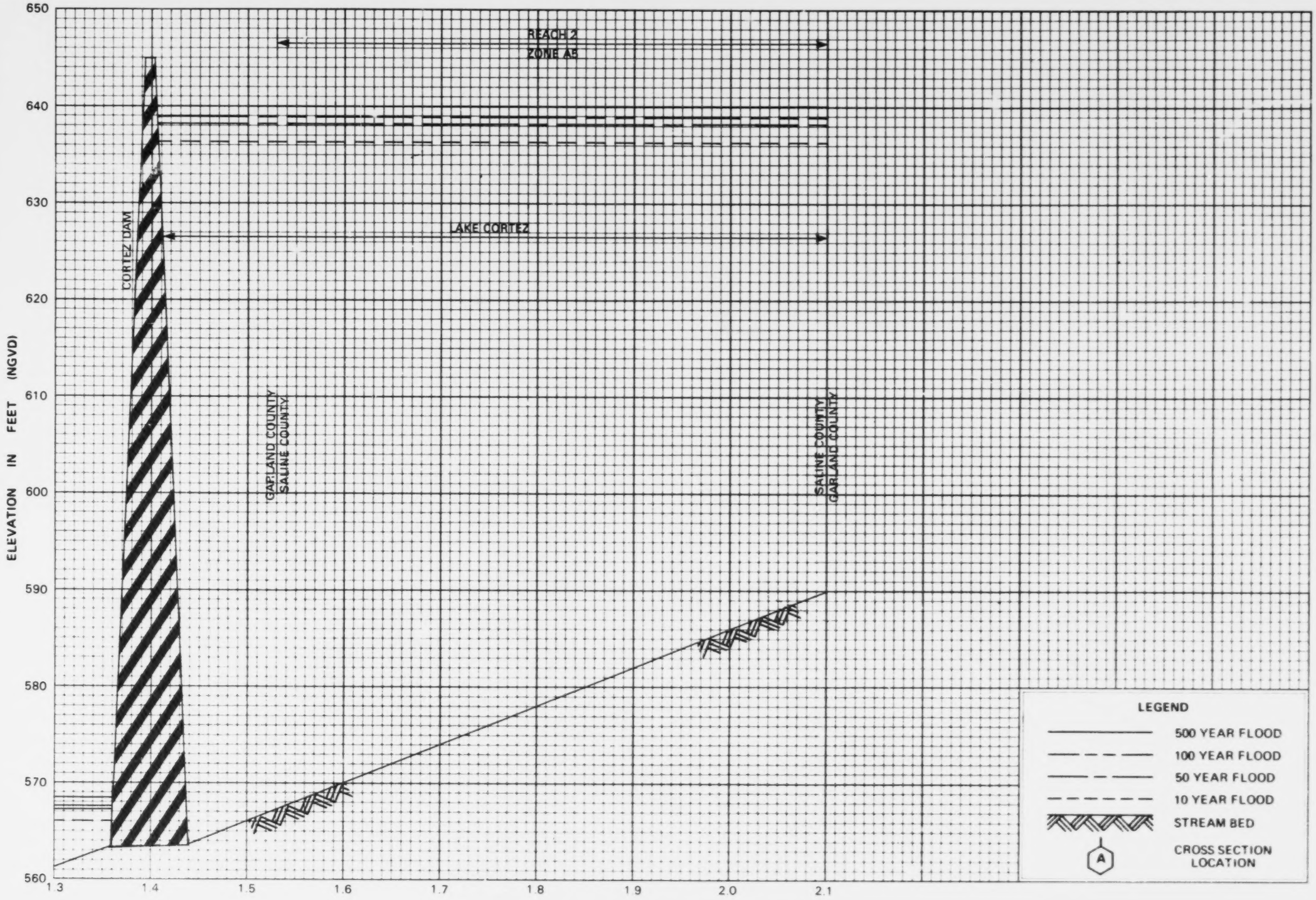

FLOOD PROFILES

MILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

08P

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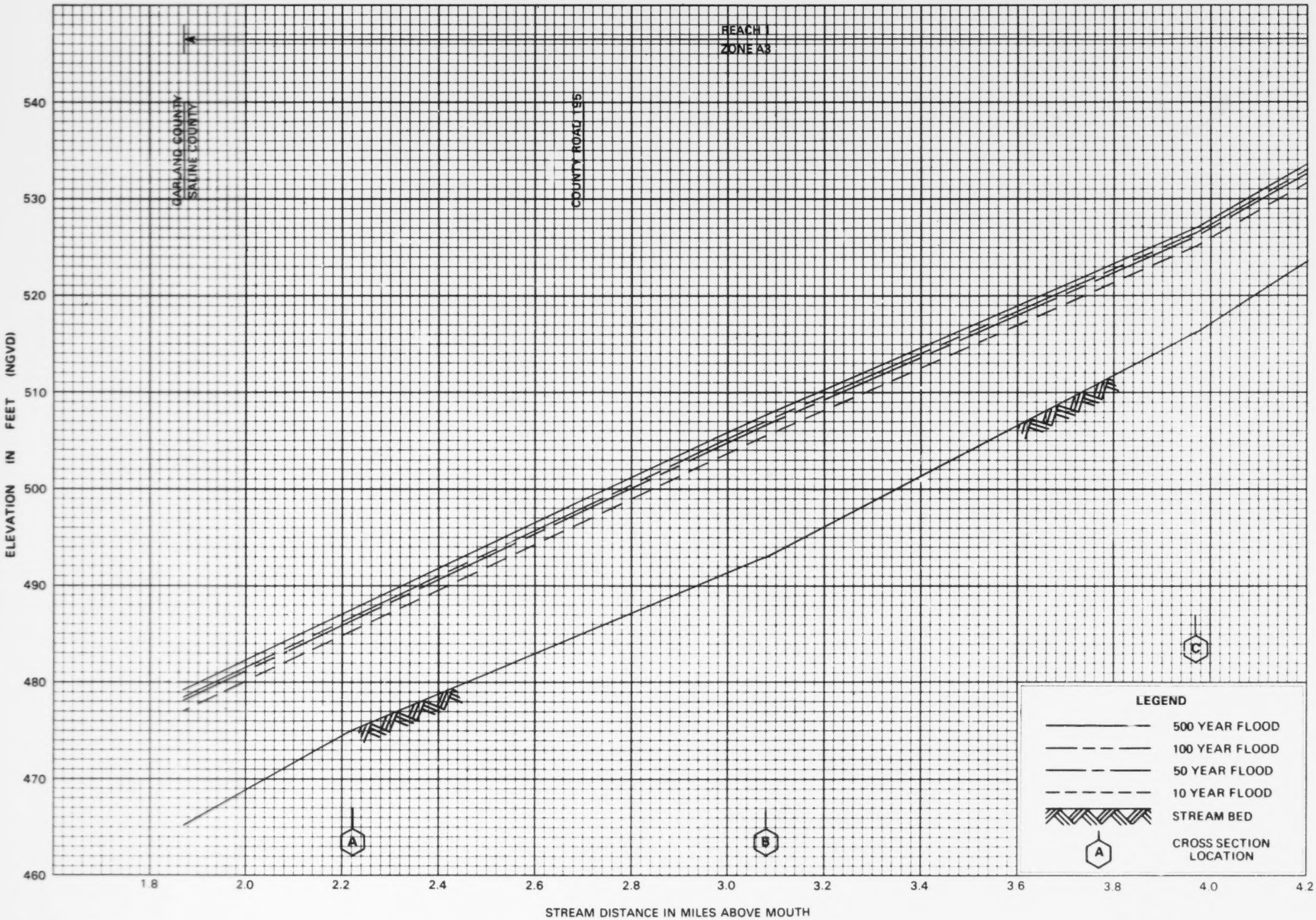

FLOOD PROFILES

CEDAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

09P

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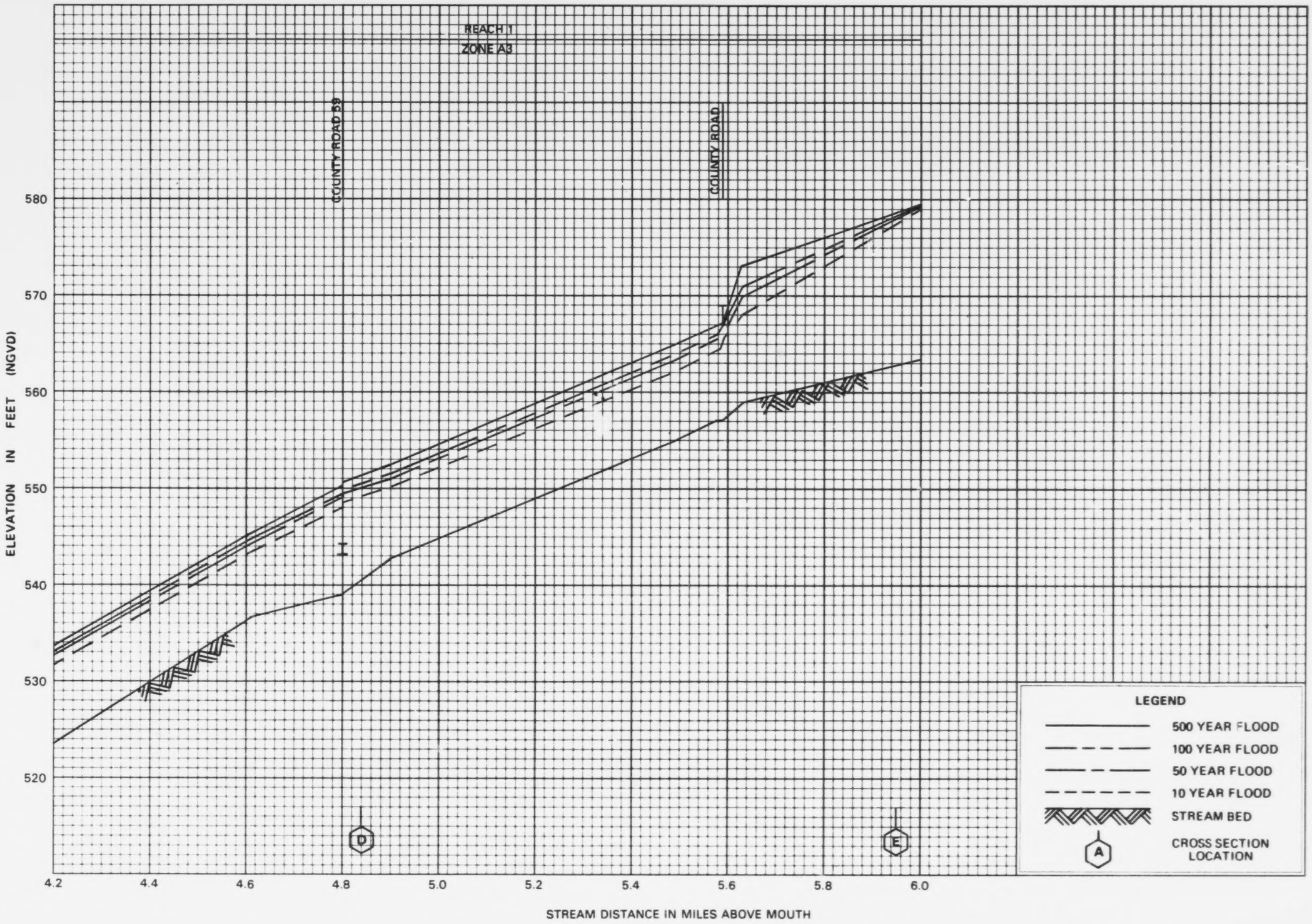

FLOOD PROFILES

CEDAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

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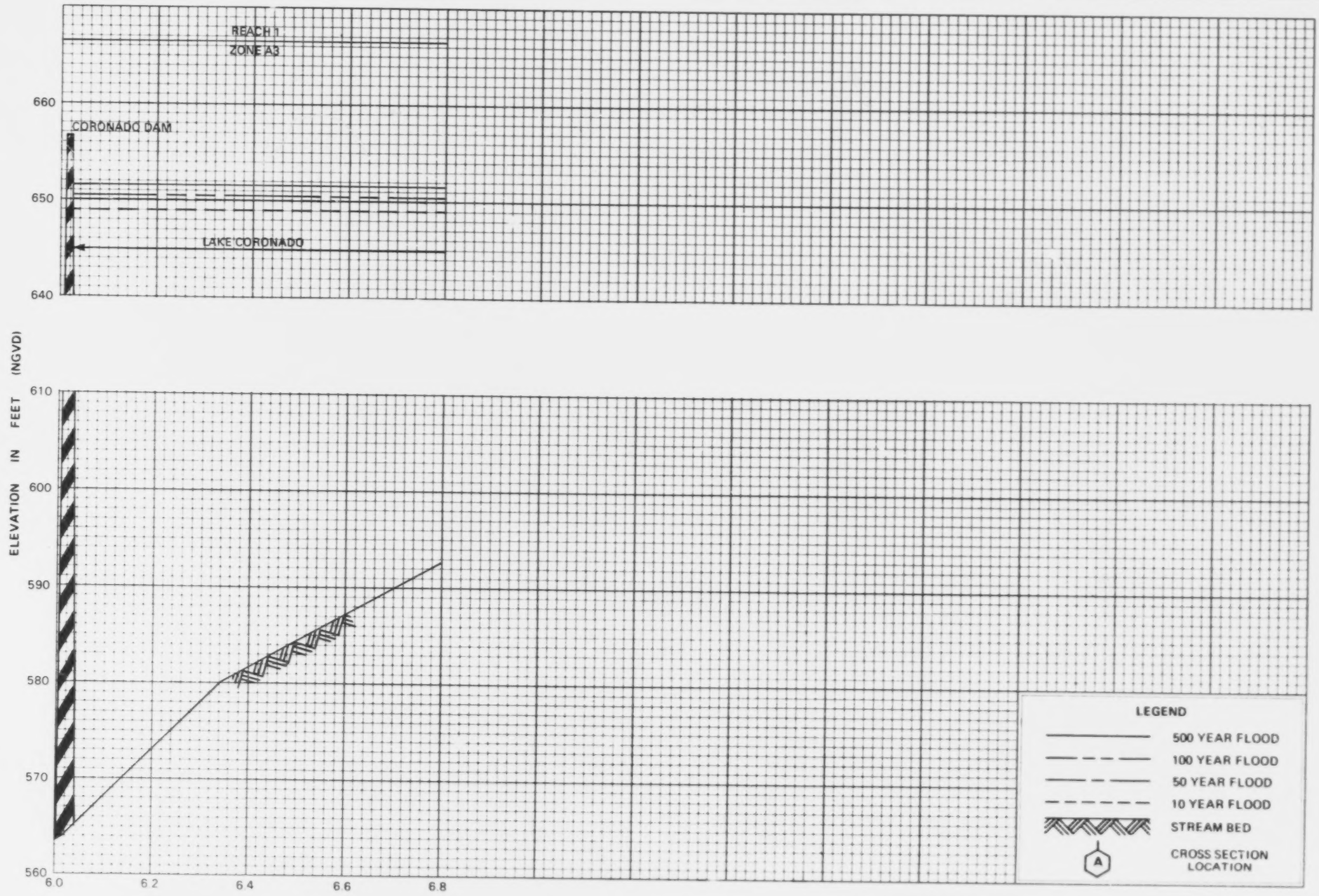

FLOOD PROFILES

CEDAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR

(UNINCORPORATED AREAS)

11P

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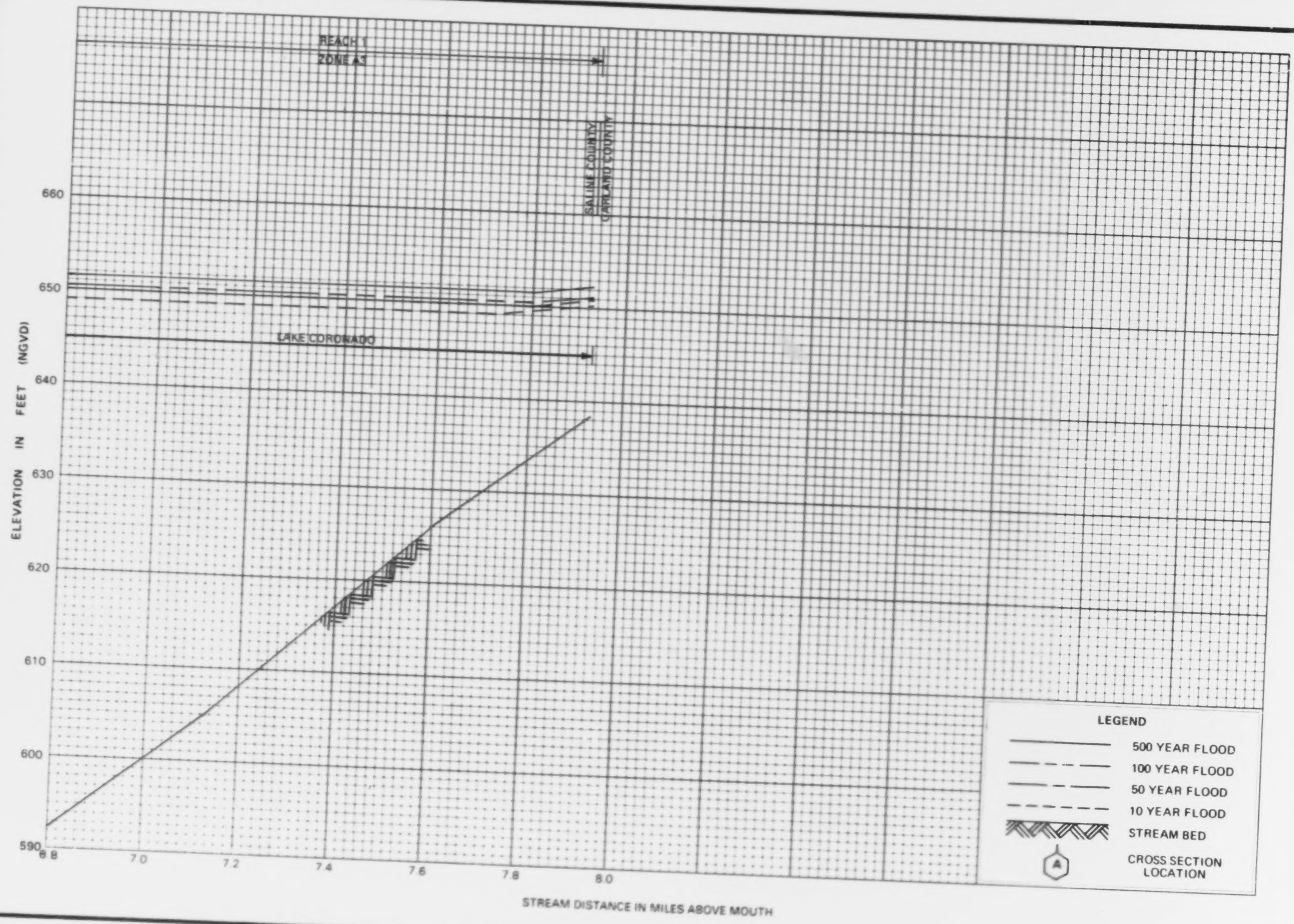

FLOOD PROFILES

CEDAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

12P

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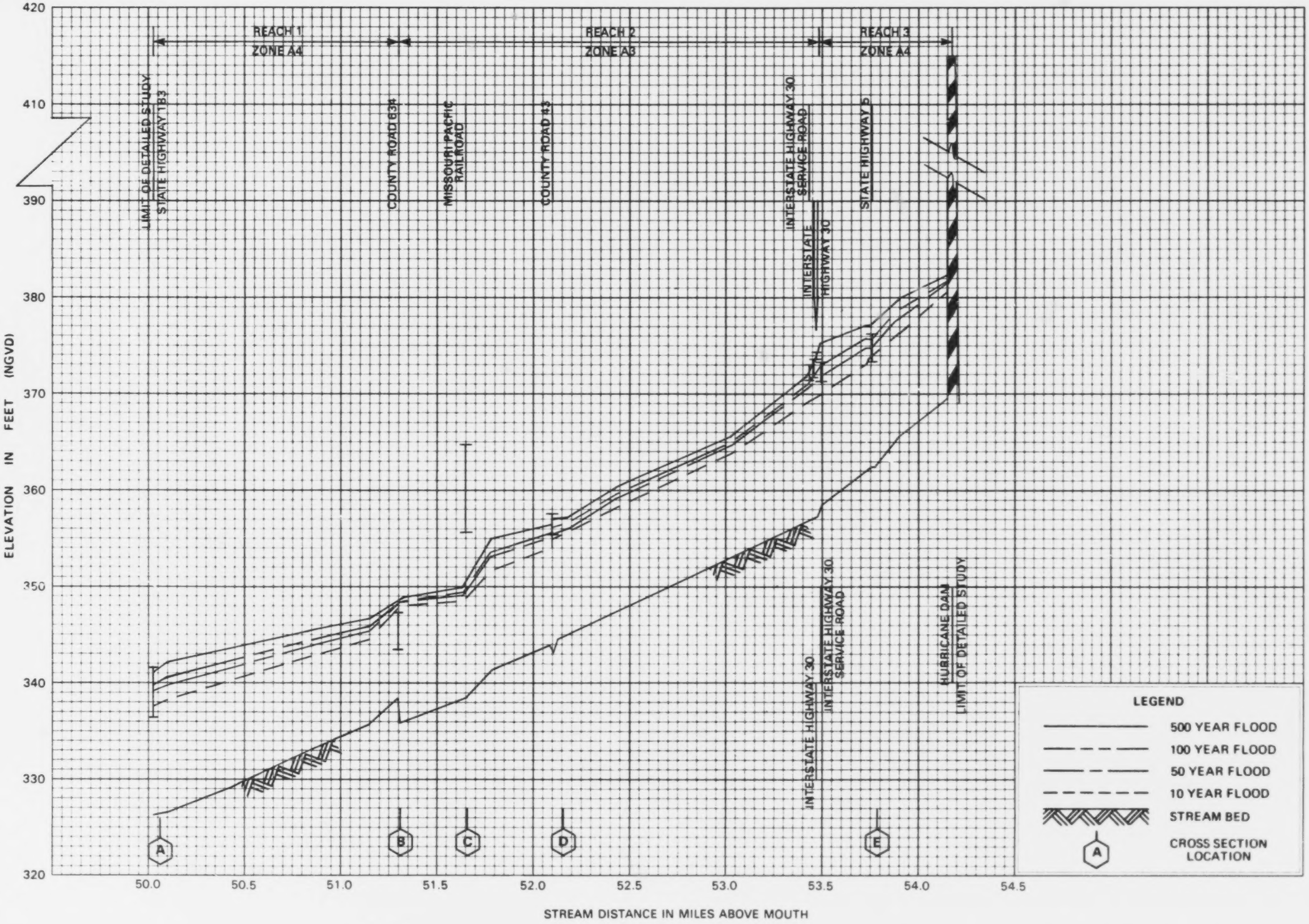

FLOOD PROFILES

HURRICANE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

13P

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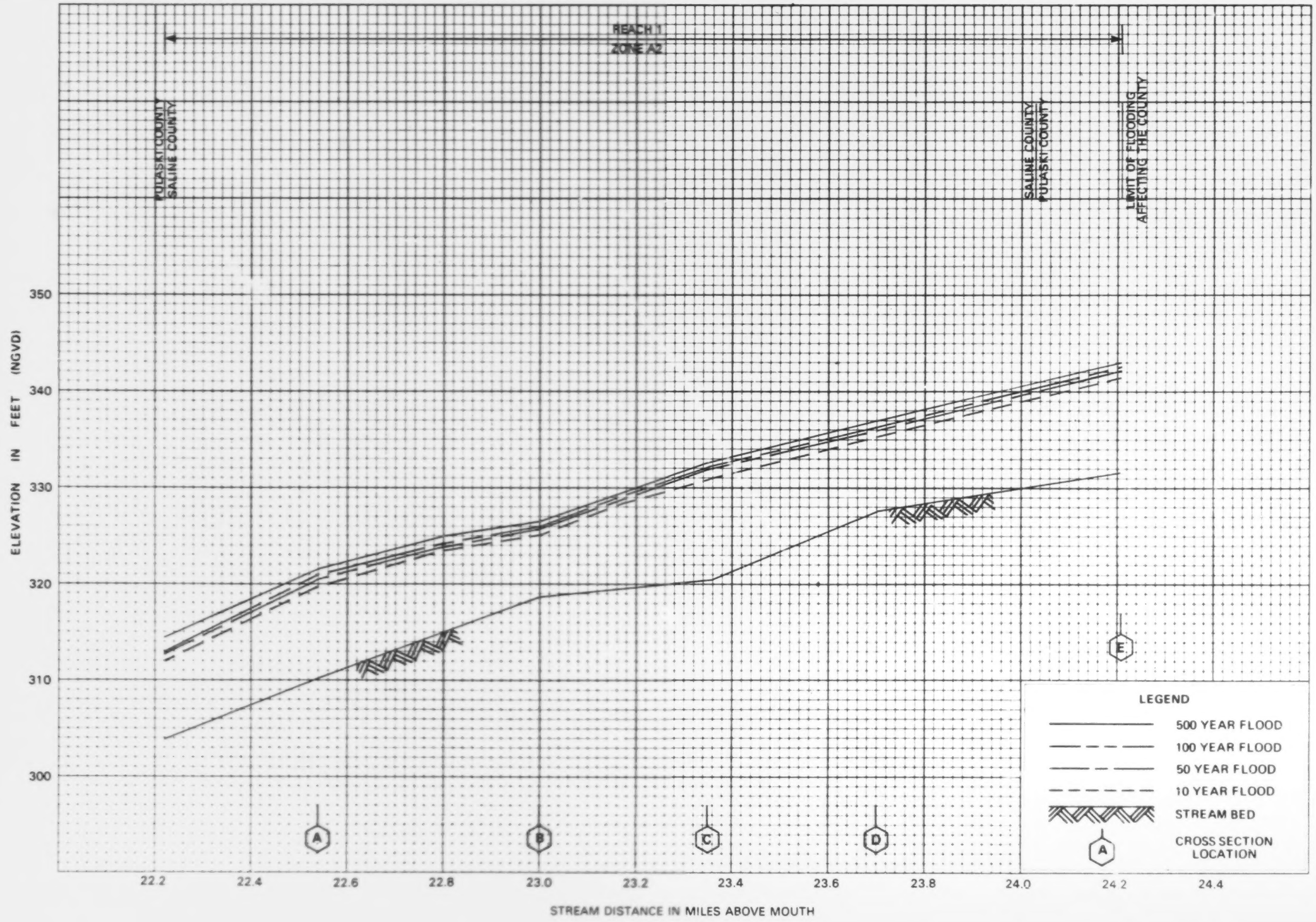

FLOOD PROFILES

FOURCHE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

14P

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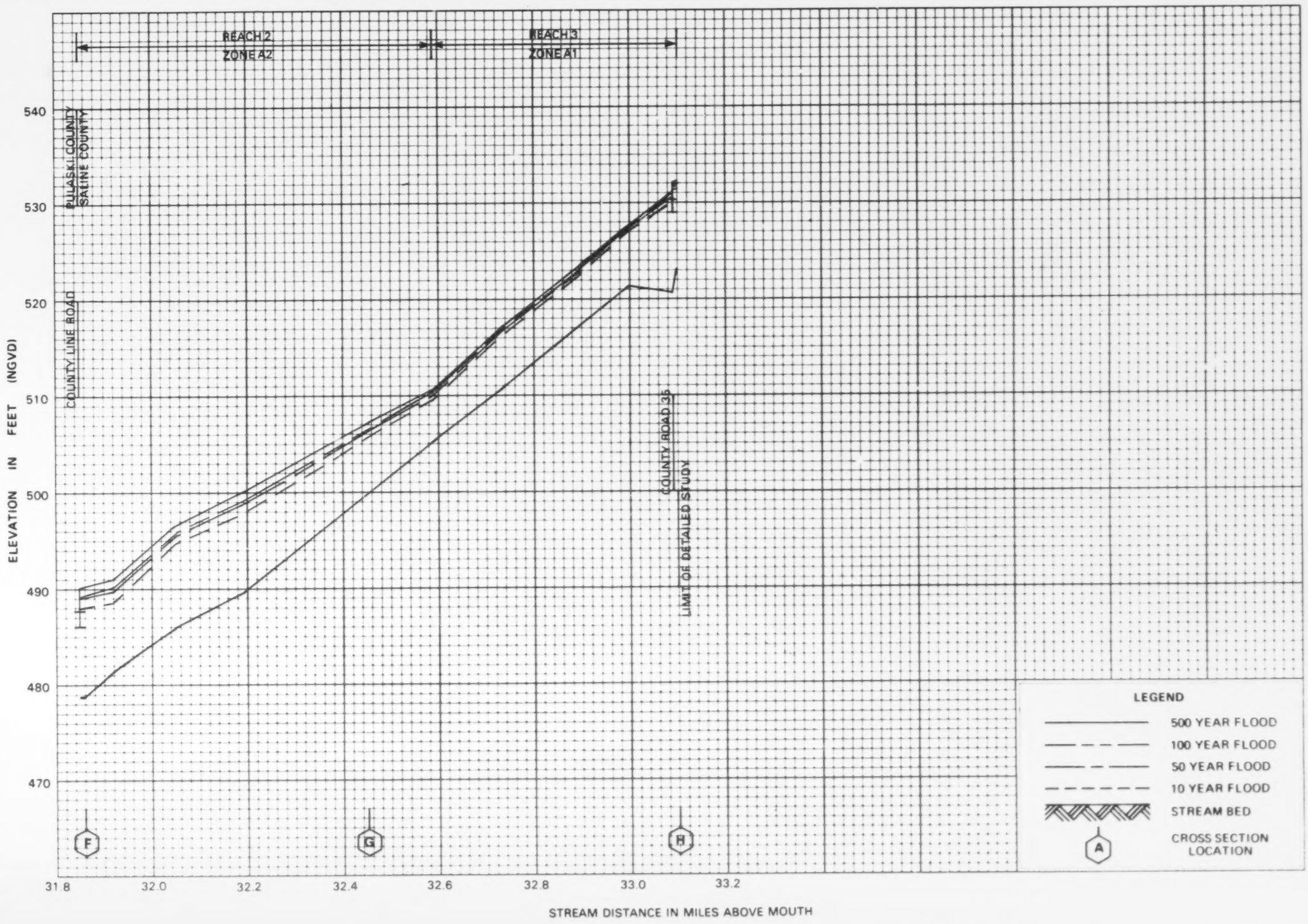

FLOOD PROFILES

FOURCHE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

15P

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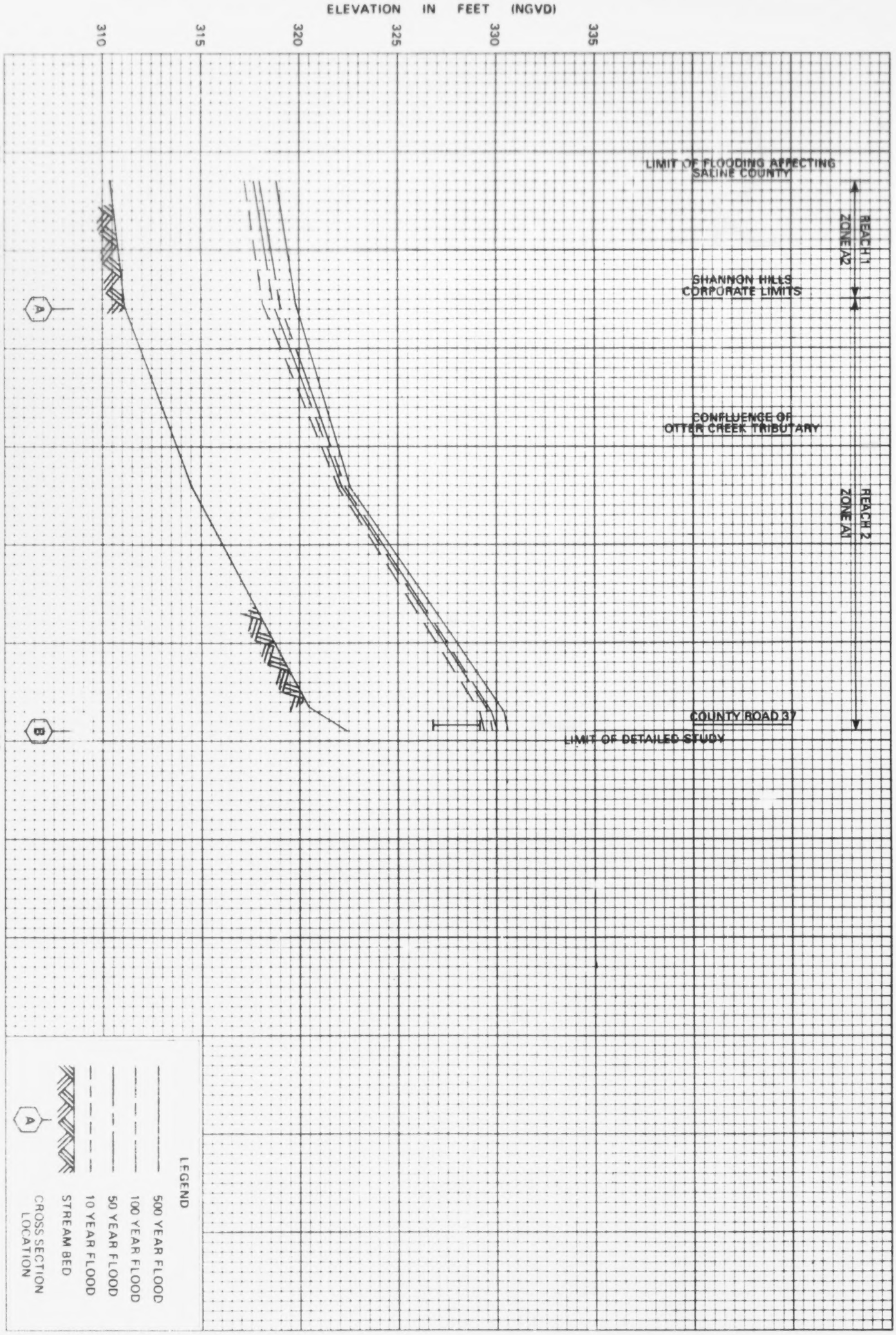

16P	FEDERAL EMERGENCY MANAGEMENT AGENCY **SALINE COUNTY, AR** **(UNINCORPORATED AREAS)**	**FLOOD PROFILES** **OTTER CREEK**

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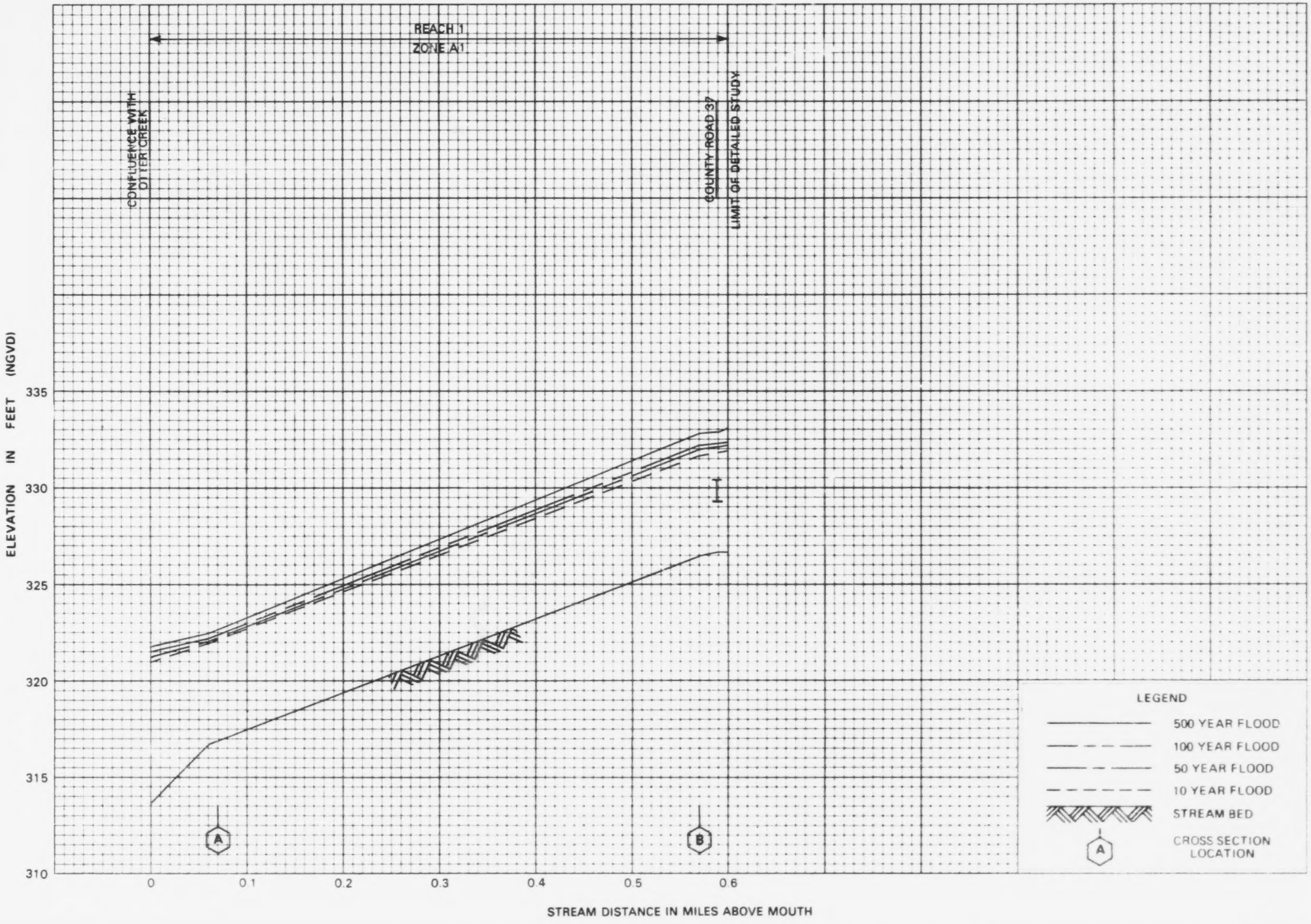

FLOOD PROFILES

OTTER CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

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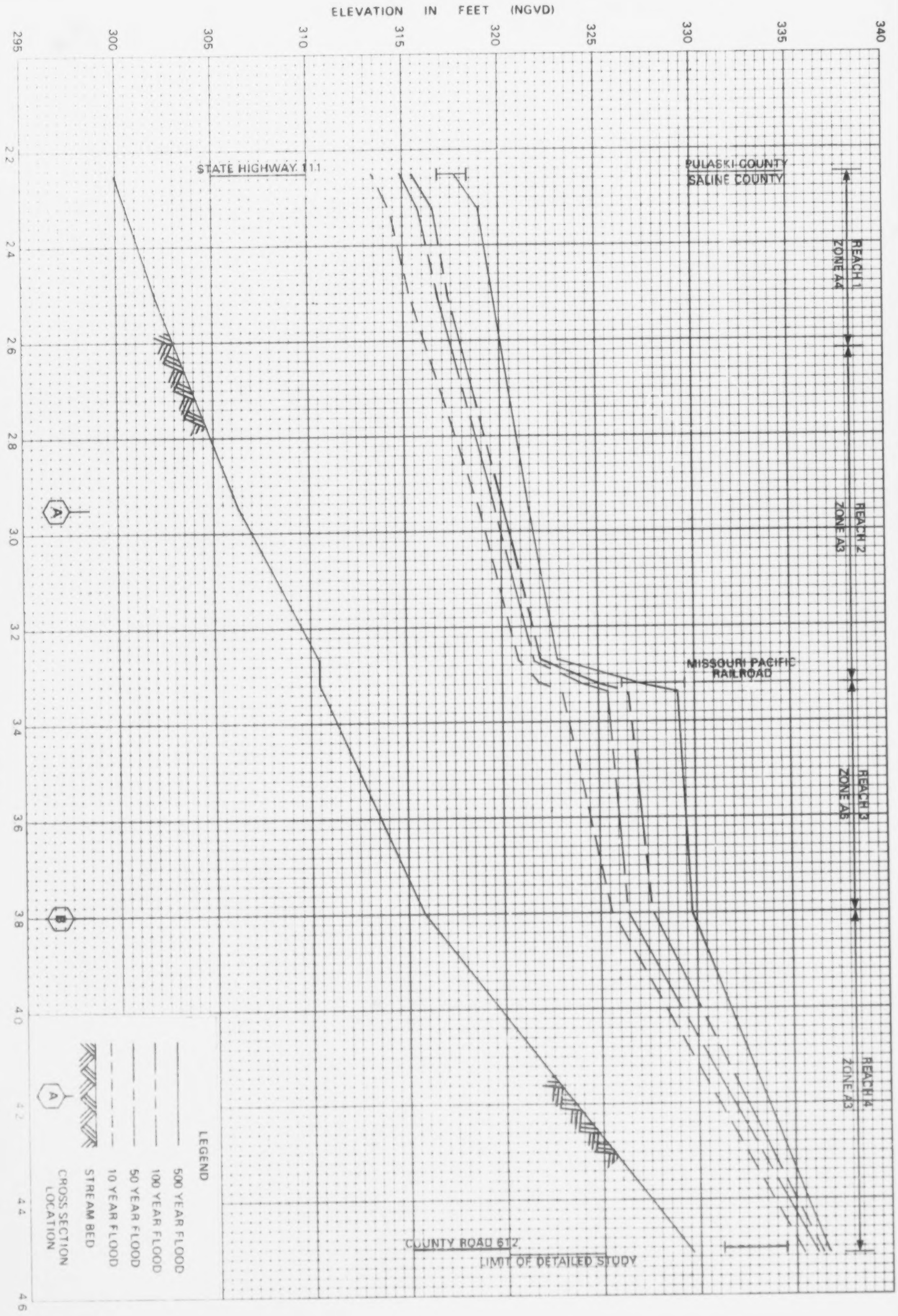

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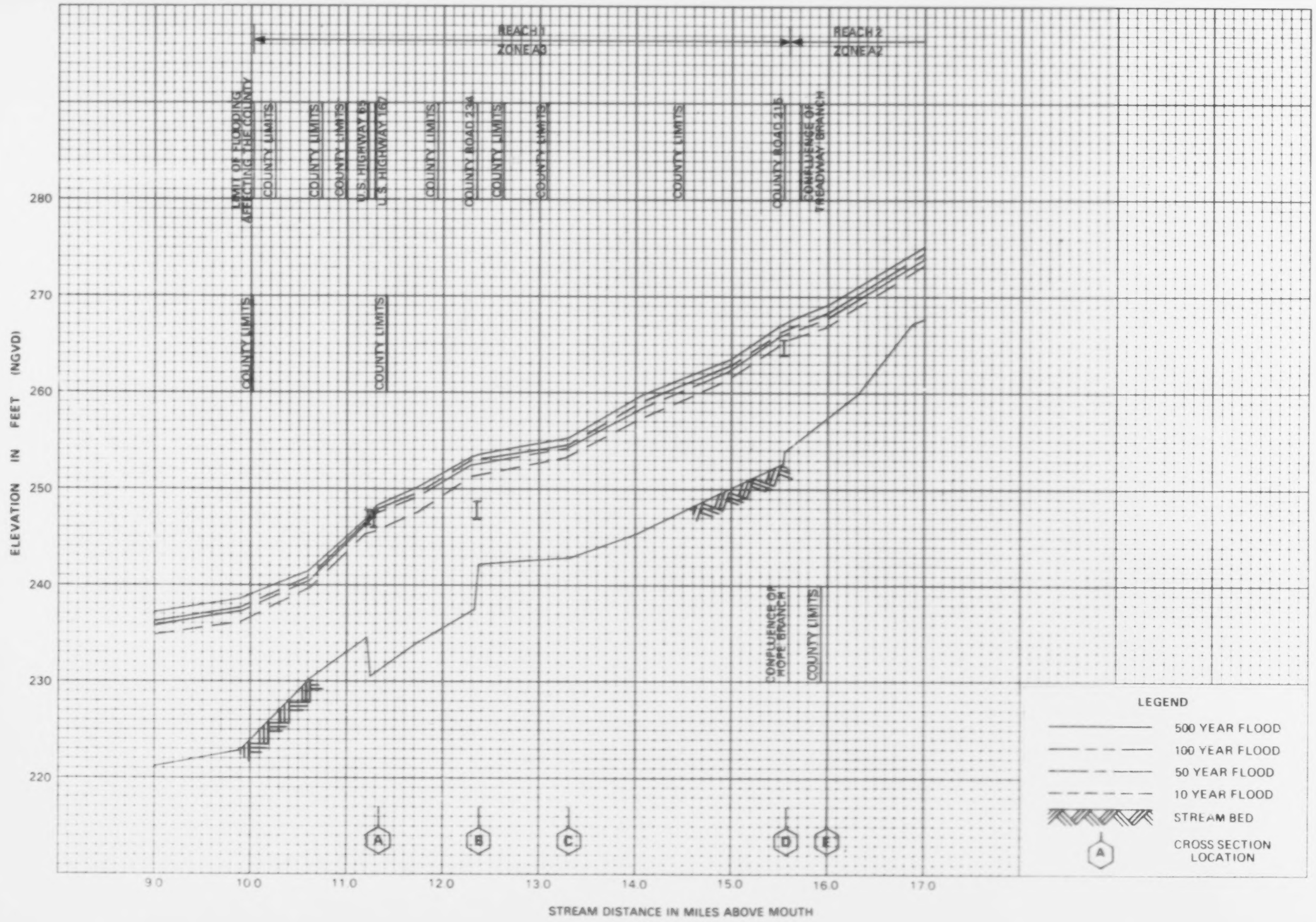

FLOOD PROFILES

LORANCE AND DRY CREEKS

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

19P

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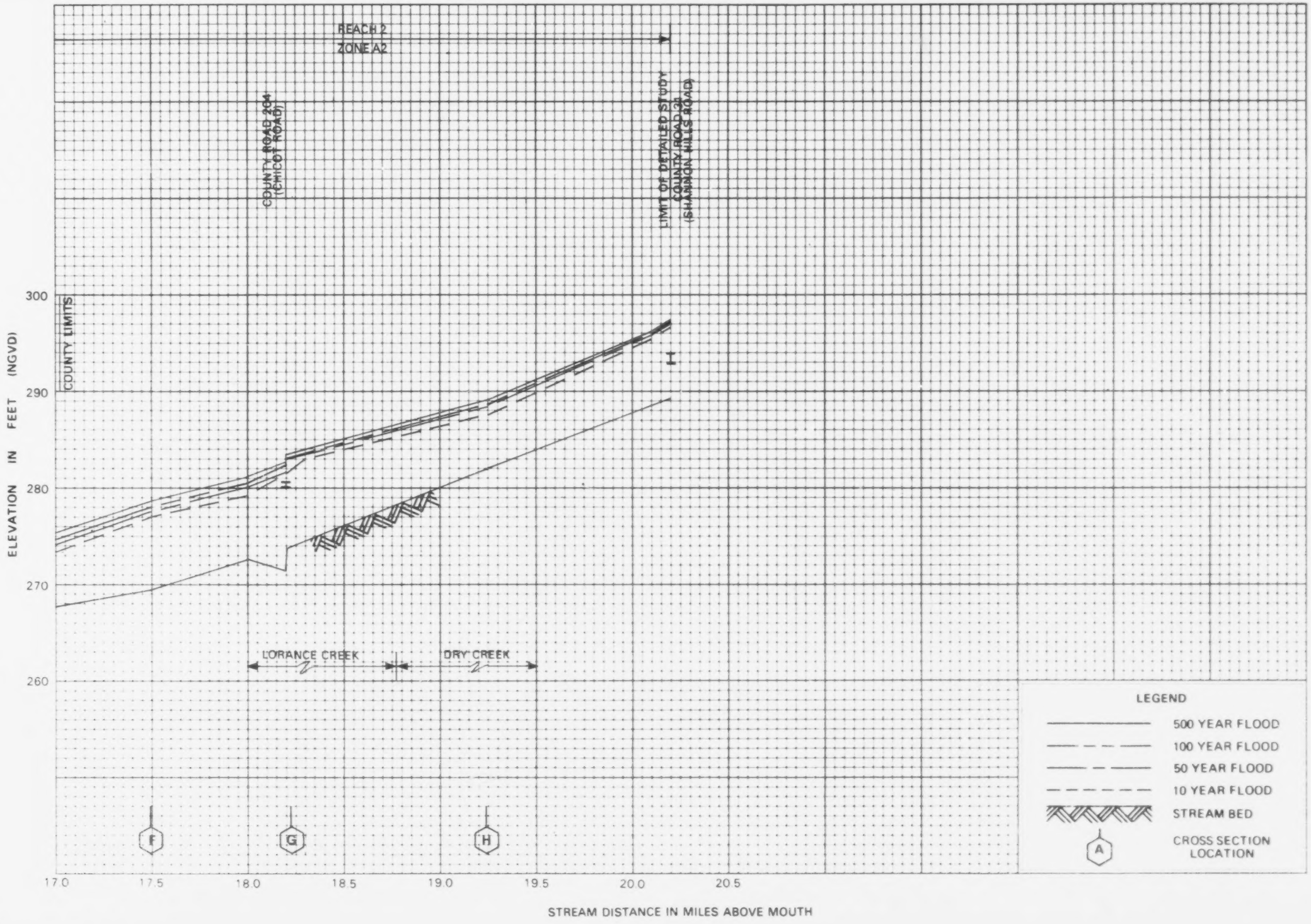

FLOOD PROFILES

LORANCE AND DRY CREEKS

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, AR
(UNINCORPORATED AREAS)

20P